

# THIE UNITED STATES OF ANTERIOA

TO ALL TO WHOM THESE PRESENTS SHARL COME;

# North American Plant Breeders

Wilhereas, there has been presented to the

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen years from the date of this grant, subject to the payment of the required fees and periodic replenishment of viable basic ed of the variety in a public repository as provided by LAW, the right to executing it, or exporting it, or offering it for sale, or reproducing it, orting it, or exporting it, or using it in producing a hybrid or different therefrom, to the extent provided by the Plant Variety Protection Act. In NITED STATES seed of this variety (1) shall be sold by variety name only as a certified seed and (2) shall conform to the number of generations the owner of the rights. (84 stat. 1542, as amended, 7 u.s.c. 2321 et seq.)

COMMON WHEAT

'Archer'

In Testimony Watercot, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 14th day of January in the year of our Lord one thousand nine hundred and eighty-two.

Allost

Commissioner Commissioner

Ocumussioner Plant Variety Protoction Office Gazia Division

Agricultural Marketing Service

John R Block Secretary of Agriculture

UNITED STATES DEPARTME AGRICULTURAL MARK LIVESTOCK, POULTRY, GRA	FORM APPROVED OMB NO. 40-R382				
APPLICATION FOR PLANT VARIES INSTRUCTIONS: See Reverse.			No certificate for p be issued unless a c has been received (5	completed applicat	tìon may ion form
1a. TEMPORARY DESIGNATION OF VARIETY	1b. VARIETY NAM	E	FOR OFFICIAL USE ONLY		
MG 201, NAPB 201 & W322-77	Archer		8100144		
2. KIND NAME	3. GENUS AND SPE		FILING DATE 7/14/81	TIME 11:30	A.M. P.M.
Hard red winter wheat	<u>Triticum</u> a	<u>estīvum</u>	FEE RECEIVED	DATE	1 ,,,,,
4. FAMILY NAME (BOTANICAL) Gramineae	5. DATE OF DETER	ber, 1976	\$ 500.00 \$ 250.00	$\frac{7/14/81}{10/23/8}$	1
6. NAME OF APPLICANT(S)		t and No. or R.F.D. No.,	City, State, and ZIP	B. TELEPHONI	
North American Plant Breeders	Code) 5201 Johns Mission, K	on Dr., P.O. Bo S 66201	x 2955	913-384-4 303-532-3	1940 K
9. IF THE NAMED APPLICANT IS NOT A PE	RSON, FORM OF	10. IF INCORPORATI			
ORGANIZATION: (Corporation, partnersh Partnership		Stamford, CT	•	March 197	<b>7</b> 3
12. NAME AND MAILING ADDRESS OF APPI				CATION AND RE	CEIVE
G. E. DIXON	· · · · · · · · · · · · · · · · · · ·	. E. Heiner or	Chris Bruns	•	
P.O. Box 2955 Mission, KS 66		.O. Box 30 erthoud, CO 80	513		
13. CHECK BOX BELOW FOR EACH ATTACH		er crioda, co co			
13A. Exhibit A, Origin and Bree		Variety (See Section 5	2 of the Plant Varie	ty Protection Ac	t.)
🗓 13B. Exhibit B, Novelty Statem	ent.				
13c. Exhibit C, Objective Descri	iption of the Variety	(Request form from .	Plant Variety Protec	tion Office.)	
x 13D. Exhibit D, Additional Desc x 13E. Exhibit E, Qualit	v Data				
14a. DOES THE APPLICANT(S) SPECIFY THAT SEED? (See Section 83(a). (If "Yes," answe	SEED OF THIS VARI r 14B and 14C below.)	X YES	IETY NAME ONLY A	S A CLASS OF CE	RTIFIE
14b. DOES THE APPLICANT(S) SPECIFY THAT LIMITED AS TO NUMBER OF GENERATION	THIS VARIETY BE	14c. IF "YES," TO 14E	, HOW MANY GENER	ATIONS OF PRO	DUC-
X YES NO		X FOUNDATION	X REGISTERED	☐ CERTIFIED	)
15a. DID THE APPLICANT(S) FILE FOR PROTE name of countries and dates.)	ECTION OF THIS VAF	RETY IN OTHER COUN	TRIES? TYES	NO (If "Ye	s," give
15b. HAVE RIGHTS BEEN GRANTED THIS VA	RIETY IN OTHER CO	UNTRIES? TYES	X NO (If "Yes,"	give name of coun	ıtries
and dates.)	si ya Fi	<b></b>			
	<i>111</i>	•			
16. DOES THE APPLICANT(S) AGREE TO THE	PUBLICATION OF H	IS/HER (THEIR) NAME	(S) AND ADDRESS IN	THE OFFICIAL	
17. The applicant(s) declare(s) that a viable replenished upon request in accordance	sample of basic seed	of this variety will be as as may be applicabl	furnished with the	application and	will be
The undersigned applicant(s) is (are) the variety is distinct, uniform, and stable a 42 of the Plant Variety Act.	owner(s) of this sex	cually reproduced nov	el plant variety, and	believe(s) that the provisions of S	he ection
Applicant(s) is (are) informed that false	representation herei	n can jeopardize prote	ection and result in p	oenalties.	
7/2/8/ (July)		18	Heene	<u> </u>	<del></del>
7/1/C1	4.	. (S	IGNATURE OF APPLI	CANT)	)
'/ 'Ø / O /		S. C.	· yereon		ALAK

(SIGNATURE OF APPLICANT)

(DATE)

FORM GR-470 (1-78)

### Exhibit A

Origin and Breeding History of Archer

PEDIGREE : Sonora/Trapper//Warrior/3/Centurk

DATE OF CROSS: 1973

HISTORY: The breeding history of Archer started in 1973 with the cross of CO695461 (F6) and Centurk. This F1 was increased in 1974, and grown as an F2 population in 1975. Single rows of F3 lines were grown in 1976 at 3 locations. One of these lines was advanced into regional yield trials in 1977. At this time Archer was given an experimental number of W322-77. In 1979, 300 head rows were grown out in Berthoud, Colorado. Eleven of these rows were selected to make up the breeders seed lot grown in 1980 at Berthoud, Colorado. In 1981, 5,000 units of registered seed are expected.

These registered fields appear to be quite uniform. Less than .5% of the plants have been rogued from the fields in 1981. Approximately 85% of these rogued plants have been five to ten centimeters taller than Archer. Less than .5% of these taller types may be encountered in subsequent generations.

'Archer' is uniform and stable.

× 7/17/81

### Exhibit B

# Novelty Statement

Archer is most similar in appearance to the hard, red winter wheat 'Vona'. However, it can be distinguished from Vona on maturity and morphological characteristics.

Archer is four (4) days later heading than Vona. Based on statistical methods, this maturity difference is highly significant.

Archer is resistant to soil borne mosaic virus, while Vona is susceptible.

Archer is significantly more winter-hardy than Vona.

Archer kernels have brush hairs that are mid-long in length. Vona kernels have brush hairs that have been classified as short.

The brush size (area the brush occupies on the kernel) on Archer kernels is large. This compares to the brush size on Vona kernels which is classified as midsized.

FORM GR-470-6 (2-15-73)

#### UNITED STATES DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE GRAIN DIVISION

EXHIBIT C (Wheat)

HYATTSVILLE, MARYLAND 20782

**OBJECTIVE DESCRIPTION OF VARIETY** WHEAT (TRITICUM SPP.) INSTRUCTIONS: See Reverse. NAME OF APPLICANT(S) FOR OFFICIAL USE ONLY North American Plant Breeders PYPO NUMBER 8100144 ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) VARIETY NAME OR TEMPORARY 5201 Johnson Dr., P.O. Box 2955 DESIGNATION Mission, KS 66201 ARCHER Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in first box (e.s. 0 8 9 or 0 9 ) when number is either 99 or less or 9 or less. 1 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH6 = POULARD 7 = CLUB2. TYPE: l = soft 3 = OTHER (Specify) 2 1 = SPRING 2 = WINTER 3 = OTHER (Specify) 2 = HARD l = WHITE 2 = RED 3 = OTHER (Specify) 3. SEASON - NUMBER OF DAYS FROM planting 2 4 FIRST FLOWERING LAST FLOWERING 4. MATURITY (50% Flowering): NO. OF DAYS EARLIER THAN .. 1 = ARTHUR 2 = SCOUT3 = CHRIS4 = LEMHI5 = NUGAINES 6 = LEEDS NO. OF DAYS LATER THAN . . . 5. PLANT HEIGHT (From soil level to top of head): 8 7 CM. HIGH CM. TALLER THAN ...... 1 = ARTHUR 2 = SCOUT4 = L.EMHI5 = NUGAINES 6 = LEEDS CM. SHORTER THAN ...... 6. PLANT COLOR AT BOOTING (See reverse): 7. ANTHER COLOR: 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN 1 = YELLOW 2 = PURPLE 8. STEM: 1 Anthocyanin: 1 = ABSENT 2 = PRESENT Waxy bloom: | = ABSENT 2 = PRESENT Hairiness of last internode of rachis: ] = ABSENT 2 = PRESENT Internodes: 1 = HOLLOW 2 = SOLIDCM. INTERNODE LENGTH BETWEEN FLAG LEAF NO. OF NODES (Originating from node above ground) AND LEAF BELOW 9. AURICLES: 1 Anthocyanin: ] = ABSENT 2 = PRESENT Hairiness: 1 = ABSENT 2 = PRESENT 10. LEAF: Flag leaf at 1 = ERECT 2 = RECURVED Flag leaf: | = NOT TWISTED 2 = TWISTED booting stage: 3 = OTHER (Specify):\_ Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT 2 = PRESENT Waxy bloom of flag leaf sheath: 1 = ABSENT

1

MM. LEAF WIDTH (First leaf below flag leaf)

CM. LEAF LENGTH (First leaf below flag leaf):

11. HEAD:   3	FORM GR-470-6 (REVERSE	9		MILLIAG
3   Density   1 = LAX   2 = DENSE   3   middense   2   2   2   2   3   4   4   4   4   4   4   4   4   4	11. HEAD:			3 - 51 0 4 7 5
AVEC 44 MINI'S  AVECAMENS: 1 = ANNICES 2 = APPICALLY AVMLETED 3 = ANNICED 4 = AVMED  1 Color at Deswrity 5 = BROWN 6 = BLACK 7 = OTHER (Specify):  0 8 CM. LENGTH 9 7 MM. WIDTH  12. OLUMES AT NATURITY: 12. Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 2 = WEDIUM (CA. 8 mm.) 2 = WEDIUM (CA. 8 mm.) 2 = WEDIUM (CA. 8 mm.) 2 = MEDIUM (CA. 3	3 Density: 1 = LAX	2 = DENSE 3) middense	121 .	,
1   Color at majurity   1 = WHITE   2 = YELLOW   3 = PINK   4 = RED   6 = BLACK   7 = OTHER (Pepcity):		ave. 44 mm's		***
1 Color al massinity 5 = BROWN 6 = BLACK 7 = OTHER (Specify):  0 8 CH. LENGTH  12 CLURES AT MATURITY: 2 Length: 1 = SHORT (CA. 7 mm.) 3 = LONG (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 2   Tidth: 1 = NARROW (CA. 3 mm.) 3 = WIDE (CA. 4 mm.) 2 = MEDIUM (CA. 8 mm.) 2   Shoulder   1 = WANTING   2 = ORLIQUE   3 = ROUNDED   3 = WIDE (CA. 4 mm.) 3 = LONG (CA. 9 mm.) 2   Shoulder   1 = WANTING   2 = ORLIQUE   3 = ROUNDED   3 = ROUNDED   3 = WIDE (CA. 4 mm.) 3 = LONG   1 = WANTING   2 = RED   3 = PURPLE   2   1 = ABSENT   2 = PRESENT   3 = ACLIMINATE   1   1 = WHITE   2 = RED   3 = PURPLE   2   1 = ABSENT   2 = PRESENT   2 = P	4 Awnedness: 1 ≈ AW	NLESS 2 = APICALLY AWNLETED 3	= AWNLETED 4 = AWNED	•
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12. GLUMES AT MATURITY! 2 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 2 = MEDIUM (CA. 9 mm.) 2 = MEDIUM (	1 Color at maturity: 5	= BROWN 6 = BLACK 7 = OTHE		
12. GLUMES AT MATURITY: 2	·	• •		
2 Leugth: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 2   Pidth: 1 = MARROW (CA. 8 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.) 3 = WIDE (CA. 4 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.) 3 = WIDE (CA. 4 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.) 4 = MEDIUM (CA. 8 mm.) 4 = MEDIUM (CA.	0 8 CM. LENGTH		9.7 MM. WIDTH	. •
2 Leugth: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 2   Stidt: 1 = NARROW (CA. 4 mm.) 3 = NOING (CA. 9 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = NOING (CA. 4 m	12. GLUMES AT MATURI	TY:		
2 Shoulder 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 6 = APICULATE 3 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE  13. COLEOPTILE COLOR:	Length:   = SHORT	(CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.)	Width: 1 = NARROW	(CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)
2   shape: 4 = SQUARE   5 = ELEVATED   6 = APICULATE   3   Boek: 1 = OBTUSE   2 = ACUTE   3 = ACUMNATE	2 3 = LONG(	CA. 9 mm.)	2 3 = WIDE (C	A. 4 mm.)
2   shape: 4 = SQUARE   5 = ELEVATED   6 = APICULATE   3   Boek: 1 = OBTUSE   2 = ACUTE   3 = ACUMNATE	* <u></u>			e min
11. COLEOPTILE COLOR:  11. WHITE 2 = RED 3 = PURPLE  12. 1 = ABSENT 2 = PRESENT  13. JUVENILE PLANT GROWTH HABIT:  22. 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT  14. SEED:  15. JUVENILE PLANT GROWTH HABIT:  22. 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT  16. SEED:  17. SEED:  18. SHAPE: 1 = SHORT 2 = MEDIUM 3 = LONG 1 Brush: 1 = NOT COLLARED 2 = ANGULAR  49. Phenolizations): 4 = BROWN 5 = BLACK  30. Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify)  17. SEED CREASE:  19. Whit: 1 = 60% OR LESS OF KERNEL 'WHINGKA'  11. Depth: 1 = 20% OR LESS OF KERNEL 'CHRIS'  2 = 80% OR LESS OF KERNEL 'CHRIS'  3 = NORARLY AS WIDE AS KERNEL 'UNINGKA'  11. Depth: 1 = 20% OR LESS OF KERNEL 'CHRIS'  3 = NORARLY AS WIDE AS KERNEL 'LEMMY  18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistion) 3 = moderate resistant  3 (Races): 15 & 151 3 (Races): 17 leid races (0 STRIPE RUST (0 LESS OF KERNEL 'LEMM')  19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)  O POWDERY MILDEW	191 .		3 Beak: 1 = OBTUSE	2 = ACUTE 3 = ACUMINATE
1   1 = WHITE   2 = RED   3 = PURPLE   2   1 = ABSENT   2 = PRESENT    15. JUVENILE PLANT GROWTH HABIT:  2   1 = PROSTRATE   2 = SEMI-ERECT   3 = ERECT    16. SEED:  1   Shape:   1 = OVATE   2 = OVAL   3 = ELLIPTICAL   1   Cheek:   1 = ROUNDED   2 = ANGULAR    2   Brush:   1 = SHORT   2 = MEDIUM   3 = LONG   1   Brush:   1 = NOT COLLARED   2 = COLLARED    4   Phenol reaction   2 = AMBER   3 = RED   4 = PURPLE   5 = OTHER (Specify)    5   7   MM. LENGTH   3   3   MM. WIDTH   2   8   6   M. PER 1000 SEEDS    17. SEED CREASE:  1   Width:   1 = 605 OR LESS OF KERNEL 'WINOKA'   2 = 355 OR LESS OF KERNEL 'SCOUT'   2 = 355 OR LESS OF KERNEL 'CHRIS'   3 = NEARLY AS WIDE AS KERNEL 'LEMHI'   3 = 505 OR LESS OF KERNEL 'LEMHI'   3 = 505 OR LESS OF KERNEL 'LEMHI'   3   STEM RUST   3   STEM RUST   3   STEM RUST   3   STEM RUST   3   (Races)   Tield races   0   STRIPE RUST   0   LOOSE SMUT   2   OTHER (Specify)   1   OTHER (S	Junpe. , oqu.,			<u> </u>
15. JUVENILE PLANT GROWTH HABIT:  2 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT  16. SEED:  1 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL  2 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG (0.5 to 1 mm in length) 4 Phenol reaction 1 mm in length) 5 = BROWN 5 = BLACK  3 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify)  5. 7 MM. LENGTH 3. 3 MM. WIDTH 2 = 80% OR LESS OF KERNEL WINOKA' 1 Width: 1 = 60% OR LESS OF KERNEL WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'  18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3 = moderate resistant 3 STEM RUST (Races) 15 & 151 3 (Races) Tield races  10 POWDERY MILDEW 0 BUNT 2 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CEREAL LEAF BEETLE 0 OTHER (Specify) 1 GREEN BUG 0 CHARACTER 1 NAME OF VARIETY 1 CHARACTER 1 NAME OF VARIETY 2 CHARACTER 2 VONB 3 CHARACTER 3 SECONDATE VONB 4 CHARACTER 3 SECONDATE VONB 4 CHARACTER 4 NAME OF VARIETY 4 CHARACTER 5 VONB 5 CHARACTER 5 VONB 6 SeconDate VONB 6 CHARACTER 7 NAME OF VARIETY 7 CHARACTER 8 VONB 8 SeconDate VONB 8 CHARACTER 9 VONB 9 COLORIDATE 9 VONB 9 COLORIDATE 9 VONB 9 VONB 9 VONB 9 COLORIDATE 9 VONB 9 V	13. COLEOPTILE COLOR		14. SEEDLING ANTHOCY	ANIN:
2   1 = PROSTRATE   2 = SEMI-ERECT   3 = ERECT	1 1 = WHITE 2 = RI	ED 3 = PURPLE	2 1 = ABSENT 2	= PRESENT
2   1 = PROSTRATE   2 = SEMI-ERECT   3 = ERECT	15 HIVENILE PLANT GR	OWTH HABIT:	<u> </u>	
TO GRECT  1. SAED:  1. Shape: I = OVATE  2 = OVAL  3 = ELLIPTICAL  1		_		
1 Shape: I = OVATE 2 = OVAL 3 = ELLIPTICAL 1 Cheek: I = ROUNDED 2 = ANGULAR  2 Brush: I = SHORT (0.5 to I mm in length) 2 = FANN 3 = LT. BROWN 4 (See instructions): I = IVORY 2 = FANN 3 = LT. BROWN 5 = BLACK  3 Color: I = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify)  5. 7 MM. LENGTH 3. 3 MM. WIDTH 2 BOYN OR LESS OF KERNEL 'WINOKA' 1 Width: I = 60% OR LESS OF KERNEL 'CHRIS' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMH!' 3 = NEARLY AS WIDE AS KERNEL 'LEMH!' 3 = STEM RUST (Races) 15 & 151 3 (Races) 161 draces 0 (Races) 15 & 151 3 (Races) 162 draces 0 (Races) 163 draces 0 (Races) 164 draces 0 (Races) 1	Z I = PROSTRATE	to erect 3 = EREC	Т	
2 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG (0.5 to 1 mm in length) 4 (See instructions): 4 = BROWN 5 = BLACK  3 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specity)  5. 7 MM. LENGTH 3. 3 MM. WIDTH 2 BOY OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'WINOKA' 3 = NEARLY AS WIDE AS KERNEL 'LEMH!' 3 = NEARLY AS WIDE AS KERNEL 'LEMH!' 3 = SO% OR LESS OF KERNEL 'LEMH!' 4   DOWN OR LESS OF KERNEL 'SCOUT' 5   OF HOT Tested, 1 = Susceptible, 2 = Resistant) 3 = MODERATE RUST (O LOOSE SMUT (Races) 15 & 151	16. SEED:			
Brush: 1 = SHORT   2 = MEDIUM   3 = LONG   1   Brush: 1 = NOT COLLARED   2 = COLLARED	1 Shape: 1 = OVATE	2 = OVAL 3 = ELLIPTICAL	1 Cheek: 1 = ROUNDE	عدد و 2 = ANGULAR
4 Phenol reaction  4 (See instructione): 4 = BROWN 5 = BLACK  3 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify)  5. 7 MM. LENGTH 3. 3 MM. WIDTH 2 & GM. PER 1000 SEEDS  17. SEED CREASE:  1 Vidit: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI' 3 = 50% OR LESS OF KERNEL 'LEMHI'  18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistont) 3 = moderate resistant  3 (Races) 15 & 151 3 (LEAF RUST, (Races)) Tield races 0 STRIPE RUST 0 LOOSE SMUT  19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistont)  19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistont)  19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistont)  19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistont)  19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistont)  19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistont)  19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistont)  19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistont)  19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistont)  19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistont)  19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistont)  19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistont)  20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:  CHARACTER NAME OF VARIETY CHARACTER NAME OF VARIETY  Plant tillering Vona Seed size Vona  Leaf size Vona  Coleoptile elongation Vona			The state of the s	A CONTRACTOR OF THE CONTRACTOR
A   Phonol reaction   Color:   = IVORY:   2 = FAWN   3 = LT. BROWN   4 = BROWN   4 = BROWN   5 = BLACK	2 Brush: 1 = SHORT	2 = MEDIUM 3 = LONG	1 Brush: I = NOT CO	LLARED 2 = COLLARED
See instructione):		1 mm in length)	, ,	- wi
Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify)  5. 7 MM. LENGTH 3. 3 MM. WIDTH 2 8 GM. PER 1000 SEEDS  17. SEED CREASE:  1 Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI' 18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistont) 3 = moderate resistant 3 (Races) 15 & 151 3 (Races) Tield races 0 (Races) Tield races 0 O (Races)  1 POWDERY MILDEW 0 BUNT 2 OTHER (Specify)SOIT borne mosaic virus)  19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistont)  O SAWFLY 0 APHID (Bydv.) 1 GREEN BUG 0 CEREAL LEAF BEETLE  OTHER (Specify) HESSIAN FLY 0 APHID (Bydv.) 1 GREEN BUG 0 CEREAL LEAF BEETLE  OTHER (Specify) CHARACTER NAME OF VARIETY  Plont tillering Vona Seed shape Vona Leaf color Vona Coleoptile elongation Vona	1 /1 I	_	•	3
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101100	Leaf size		Seed shape	
Leof carriage Vona Seedling pigmentation Vona			Coleoptile elongation	
	Leaf carriage	Vona	Seedling pigmentation	Vona

## INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)
- LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

#### Exhibit D

# Additional Description of Archer

Archer is a hard, red winter wheat tested as W322-77 and NAPB 201. It was developed by North American Plant Breeders.

Archer is a semi-dwarf approximately 87 cm's in height. Juvenile growth habit is semi-erect to erect. Plant color at booting is green with an erect, twisted flag leaf. Auricles are hairy expressing no anthocyanin. Waxy bloom is present on both stem and flag leaf sheath. Nodes are solid and are four (4) in number.

Head shape is strap-clavate and awned. The glumes are glabrous with acuminate beaks and oblique shoulders. Head is white at maturity.

Kernels are red, ovate, and short. Seed crease is narrow and shallow with rounded cheeks. Brush is mid-long with no collar present.

Archer is adapted to Nebraska, northern Kansas and northeastern Colorado.

Archer has been in regional yield trials since 1977.

	Wheat <u>Protein</u> (%)	Flour Protein (%)	Flour Yield (%)	Flour Ash (%)	Bake ABS (%)	Bake Mix time (min.)	Loaf Volume
Archer	12.7	11.7	68.6	0.409	62	5.0	(c.c) 881
Wings	12.1	11.2	69.9	0.371	61	4.7	890
Rocky	12.9	11.7	68.5	0.398	62	6.7	851
Centurk	12.8	11.7	68.2	0.396	64	5.9	893

13 stations/4 years. 1977, 1978, 1979, 1980